



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,034	08/09/2001	W. Neal Bebber	2020.23B	5495

21176 7590 11/06/2002

SUMMA & ALLAN, P.A.
11610 NORTH COMMUNITY HOUSE ROAD
SUITE 200
CHARLOTTE, NC 28277

EXAMINER

BEFUMO, JENNA LEIGH

ART UNIT	PAPER NUMBER
----------	--------------

1771

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/927,034

Applicant(s)

BEBBER ET AL.

Examiner

Jenna-Leigh Befumo

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-25 and 41-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-25 and 41-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,5
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Preliminary Amendments A and B, submitted as Paper Nos. 3 and 4 on August 9, 2001, and March 18, 2002, respectively, have been entered. Claims 1 – 7 and 26 – 40 have been cancelled. Therefore, the pending claims are 8 – 25 and 41 – 66.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description: reference number 15, mentioned on page 5, line 27 and page 6, line 9 of the specification is not indicated in Figure 1. Correction is required.

Claim Objections

3. Claims 9 and 60 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form. Claim 9 does not limit and is actually slightly broader than claim 8 since the aggregate strength can be “at least 10 g/den” which includes 10 g/den itself instead of “greater than 10 g/den” which excludes 10 g/den. Claim 60 repeats the limitation of claim 50.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1771

5. Claims 8 – 25, 41 – 56, and 59 – 66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claims 8, 41, 50, and 59, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claims 9 – 25, 42 – 49, 51 – 58, and 60 – 66 are rejected due to their dependence on claims 8, 41, 50, or 59.

7. The phrase "helix angle consistent with a twist of 6 turns per inch in a 1500 denier yarn" in claim 20 is indefinite. It is unclear how an angle can be defined by the number of turns per inch and yarn denier. Since denier is weight per a set length it doesn't indicate diameter. Therefore, the angle would change based on the density of the fiber since the diameter would change based on the density of the fiber. Claims 21, 22, 42 – 44, 51 – 53, 59 and 60 are similarly rejected. Claims 61 – 66 are rejected because their dependency on claim 59. Claims 20 – 22, 42 – 44, 51 – 53, and 60 were not further examined on merit. The helix angle feature in claim 59 was not examined, however the other features of the independent claimed were searched.

8. The phrase "an airship laminate" in claims 9 – 25 is indefinite because of changes in the preamble. In claim 8, Applicant only positively recited a laminate. The recitation to an airship is intended use and is not given patentable weight at this time. Claims 42 – 49 are similarly rejected.

9. The term "high strength" in claim 8 is a relative term which renders the claim indefinite. The term "high strength" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

Art Unit: 1771

reasonably apprised of the scope of the invention. All fibers inherently have some strength can be consider "high" when compared to some weaker object. What specific fiber strength does the Applicant consider "high?" Claims 41, 50, and 59 are similarly rejected. Claims 9 – 25, 42 – 49, 51 – 58, and 60 – 66 are rejected due to their dependence on claims 8, 41, 50, or 59.

10. The term "low weight" in claim 8 is a relative term which renders the claim indefinite. The term "low weight" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 41, 50, and 59 are similarly rejected. Claims 9 – 25, 42 – 49, 51 – 58, and 60 – 66 are rejected due to their dependence on claims 8, 41, 50, or 59.

11. The term "sheet" in claim 8 is indefinite. It is unclear what a "sheet" of yarns is. Is the fabric a multi-layered woven structure, where the "sheet" would be one of the layers? Or, is a "sheet" of yarns a term to describe the yarns in one direction of the weave, i.e., the weft yarns are one "sheet of yarns" and the warp yarns are a separate "sheet of yarns"? Claim 18 is similarly rejected.

12. The term "available crossing points formed" in claim 16 is indefinite. It is unclear how a fabric won't have 100% of the crossing points formed. If the yarns crossover each other the crossing point is available and it is formed. If the yarns don't crossover each other than the crossing point won't be formed and the point won't be available. Claim 17 is similarly rejected. These claims were not further examined on merit.

13. The term "different" in claim 20 is indefinite. How are the fabric layers "different" from one another? Are the fabric layers still woven layer with a small difference, such as twist,

Art Unit: 1771

material, aspect ratio, weave pattern, or another construction parameter? Or are the fabric layers completely “different” with nothing alike in either layer?

14. Claims 8 – 11, 14 – 24, 41 – 47, 50 – 56, and 59 – 64 are indefinite because they fail to set forth the composition and structure of the laminate and claim properties to the laminate.

Claims that merely set forth physical characteristics desired in an article, and not setting forth specific compositions which would meet such characteristics are invalid as vague, indefinite, and functional since they cover any conceivable combination of ingredients either presently existing or which might be discovered in the future. *Ex parte Slob* (PO BdApp) 157 USPQ 172.

Claim Rejections - 35 USC § 102/103

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 8 – 12, 23, 24, 41, 45 – 47, 50, 54 – 56, 59, and 61 – 64 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being unpatentable over Mater et al. (5,118,558).

Mater et al. disclose a multi-layered composite material for aerostats. The composite comprises a woven fabric made from high tenacity polyester yarn and a thermoplastic polyester film layer and polyurethane film layers to form a gas-holding structure (column 2, lines 16 – 32). The figure discloses a woven fabric **24** with polyurethane layers **12** and **14** on one side of the fabric and a polyurethane layer **18**, polyester film layer **20** and a polyurethane layer **22**, on the other side of the fabric. On page 4 of the specification, the Applicant discloses that heavy load airship fabrics in the Mater et al. reference are made with high strength yarns “in the form highly twisted yarns in a plain woven structure (e.g. U.S. Patents Nos. 5,837,623 and 5,565,264). Both US 5,565,264 and 5,837,623, show a woven fabric made from elliptical and not round fibers in Figure 1A. 5,837,623 discloses a woven structure made of high strength yarns have a twist level of 4 or 5 twists per inch (column 4, lines 23 – 28). Additionally, the yarns have an aspect ratio a/b much less than 1 (column 4, lines 30 – 35). Based on Applicant’s Admission, it is presumed that the woven fabric construction in the Mater et al. laminate is made with yarns have a twist of 4 or 5 twists per inch and an aspect ratio of less than 1.

Although Mater et al. does not explicitly teach the limitations of aggregate strength and strength ratio, it is reasonable to presume that said limitations are inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. woven fabric made with high-strength yarns and polyurethane and multi-layer gas barriers) and in the similar production steps (i.e. applying the gas barrier layers to the woven fabric) used to produce the dirigible fabric. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 495. In the alternative, the claimed limitations would obviously have been provided by the process disclosed by Mater et al. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977)

Art Unit: 1771

as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102. Thus, claims 8 – 12, 23, 24, 41, 45 – 47, 50, 54 – 56, 59, and 61 – 64 are rejected.

18. Claims 8 – 13, 18, 19, 24, 25, 50, and 55 – 58 are rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cuccias (6,074,722).

Cuccias discloses a multi-layered composite material suitable for use as the wall of a pressurized container (abstract). The composite material is made of two woven fabric layers, where the woven fabrics are laid at different angles, 45°, to each other (column 2, lines 55 – 65). The layers are also made of different material with one fabric layer made of polyester and the other layer is made from liquid crystal polyester fibers or aromatic polyamide fibers (column 4, lines 15 – 24). The woven fabric layers in Figures 3 are woven in a plain weave pattern. Any woven fabric inherently has a certain number of crossing points which can be interpreted as the minimum number to impart “sufficient integrity.” Also, the yarns will inherently have “sufficient” twist, since any multifilament yarn would inherently have twist to maintain the yarn integrity, or even a yarn with no twist would still be “sufficient” to produce a woven fabric.

Although Cuccias does not explicitly teach the limitations of aggregate strength and strength ratio, it is reasonable to presume that said limitations are inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. a woven fabric made with high-tensile strength aromatic polyamide or liquid crystal polyesters fibers) and in the similar production steps (i.e. coating the fabric with a gas barrier layer) used to produce the dirigible fabric. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205

Art Unit: 1771

USPQ 495. In the alternative, the claimed limitations would obviously have been provided by the process disclosed by Cuccias. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102. Thus, claims 8, 9, 14, 18, 19, 24, 25, 50, and 58 are anticipated by Cuccias.

Additionally, Cuccias, as shown in Figure 3, discloses a resin layer **40** on one side of the fabric layers **42** and **46**, and multiple layers comprising a resin layer **48**, a polyester terephthalate film layer **50**, a resin layer **52**, and a polyvinyl fluoride layer **54**, on the other side of the fabric layers (column 4, lines 11 – 35). The resin layers are preferably polyurethane (column 4, line 15). Therefore Cuccias anticipates claims 10 – 13 and 55 – 57.

19. Claims 8, 9, 14, 16, 24, 50, 59, 62, are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Phillips (2,712,170).

Phillips discloses a treated woven fabric wherein the gauge, or thickness of the fabric, and the porosity are reduced by spreading or flattening the yarns in the fabric (column 1, lines 17 – 20). The spreading of the fibers or filaments in the yarns closes the interstices of the woven fabric (column 1, lines 54 – 56). The woven fabric can be made from a variety of different weave patterns including plain, twill, sateen, or basket (column 1, lines 68 – 70). A basket weave, twill weave, and a sateen weave will inherently have 50% or less crossovers than the total number of crossovers in a plain weave fabric. The woven fabric can be made from natural or synthetic filaments or fibrous yarns (column 2, lines 1 – 9). Specific materials include fibers of cellulosic origin, such as rayon, or polyamides and polyesters (column 2, lines 22 – 30). Further, Phillips discloses that the flattened fabric is coated with a gas impervious coating to fill the remaining voids in the fabric (column 4, lines 40 – 45). The flattened fabric will require a

Art Unit: 1771

smaller quantity of coating to produce the desired result (column 4, lines 53 – 55). Finally, Phillips discloses that the woven fabric is made of yarns having essentially no twist (column 5, lines 70 – 71). The examiner interprets essentially no twist to include yarns with about 1 twist per inch. This coated fabric meets the requirements of fabrics used in standard airship designs (column 6, lines 20 – 21).

Although Phillips does not explicitly teach the limitations strength of the woven fabric or the strength ratio of the yarns to the woven fabric, it is reasonable to presume that said limitations are inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. low twisted yarns of polyester and polyamides) and in the similar production steps (i.e. weaving the yarns together in a basket weave and then coating the fabric with a gas barrier layer) used to produce the airship fabric. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 495. In the alternative, the claimed limitations would obviously have been provided by the process disclosed by Phillips. Note *In re Best*, 195 USPQ 433, footnote 4 (CCPA 1977) as to the providing of this rejection under 35 USC 103 in addition to the rejection made above under 35 USC 102. Therefore, claims 8, 9, 14, 16, 24, 50, 59, 62, are rejected.

Claim Rejections - 35 USC § 103

20. Claims 13, 18, 19, 24, 48, 49, 57, 58, 65, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mater et al. (5,118,558) in view of Cuccias.

The features of Mater et al. and Cuccias have been set forth above. Mater et al. fails to teach using aromatic polyamide or liquid crystalline fibers. Cuccias teaches using high strength aromatic polyamide or liquid crystalline polyester fibers in the composite to meet the strength

Art Unit: 1771

requirements for large non-rigid airships (column 1, lines 52 – 56). Therefore, it would be obvious for one having ordinary skill in the art to use the high strength fibers in the woven fabric taught by Mater et al. because it would help meet strength requirements for the composite structure. Thus, claims 25, 49, 58, and 66 are rejected.

Also, Cuccias teaches using multiple fabric layers at orientations of 45° angles to carry the shear loads (column 1, lines 27 – 30). It would have been obvious to one having ordinary skill in the art to use multiple fabric layers at different angle orientations in the Mater et al. composite to help reinforce the composite material and to distribute the load forces evenly through the structure. Hence, claims 18 and 19 are rejected.

Finally, Cuccias teaches that the polyvinyl fluoride layer is used to resist degradation due to ultraviolet light and prevents wind erosion (column 4, lines 29 – 30). Thus, it would have been obvious to one having ordinary skill in the art to use a polyvinyl fluoride layer on the outside of the Mater et al. composite to prevent ultraviolet degradation and wind erosion, producing a stronger composite that lasts longer. Therefore claims 13, 48, 57, and 65 are rejected.

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips.

The features of Phillips have been set forth above. While Phillips discloses using basket weave fabrics, Phillips fails to teach the specific construction of the basket weave fabric. The simplest type of basket weave is a two by two weave structure. It would have been obvious for one having ordinary skill in the art to choose a two by two basket weave for the basket weave taught by Phillips, since Phillips teaches using basket weaves and a two by two basket weaves has the highest number of crossover points out of any basket weave structure, which would

Art Unit: 1771

produce a woven fabric with better dimensional stability due to the higher number of crossover points. Thus, claim 15 is rejected.

22. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips.

The features of Phillips have been set forth above. Phillips discloses that various types of woven fabrics, such as twill, sateen, and basket weaves, can be used as the base fabric. The basket, twill, and sateen weave fabrics can all be made with constructions that require the yarns to float over a section of yarns, instead forming a crossover point with each yarns as in a plain weave. The higher number of floats the smoother the fabric. Also, the lower the number of crossover points, the more the yarns are going to be flattened out since they won't be restricted by as many crossover points. Thus, it would have been obvious to choose a fabric with less than 20% of the crossover points of a plain weave to produce a fabric having a smoother surface as well as forming a more open weave which will restrict the yarns less during the flattening out treatment. Thus, claim 17 is rejected.

23. Claims 23, 41, 45, 54, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips.

The features of Phillips have been set forth above. As shown by the Figures, after the woven fabric is treated the yarns are flattened to produce yarns that are no longer round, but instead elliptical, having a width that is greater than the height of the yarn, (column 3, lines 25 – 29). In fact, Phillips teaches that the yarn resembles the shape of a flat ribbon (column 3, lines 30 – 32). Although, Phillips fails to teach the aspect ratio of the yarns, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the claimed aspect ratio, between 1:2 and 1:7, since discovering the optimum or workable ranges

Art Unit: 1771

involves only routine skill in the art, as set forth above. Further, Phillips clearly teaches that the yarns should be flattened out, resembling ribbons, to fill the open spaces in the woven fabrics.

Thus, it would have been obvious for one having ordinary skill in the art to flatten the yarns to the point that the voids are mostly filled with out spreading the yarns too thin that new voids are created in the fabric or the strength and stability of the woven fabric are compromised.

Therefore, claims 23, 41, 45, 54, and 61 are rejected.

24. Claims 10 – 13, 18, 19, 25, 55 – 58, and 63 – 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips in view of Cuccias.

Claims 46 – 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips as applied to claim 41 above, and further in view of Cuccias.

The features of Phillips have been set forth above. Phillips teaches the flattened fabric can be used to create airship fabrics. Phillips fails to teach two gas barriers, wherein the second gas barrier is a multi-layered composite. The features of Cuccias have been set forth previously. Cuccias discloses an airship laminate which has a polyurethane gas barrier on one side of the woven fabric and a composite having a polyurethane layer, and polyester film layer, another polyurethane layer, and a polyvinyl fluoride layer, in that order, on the other side of the woven fabric. Cuccias teaches that airship fabrics must have tear resistance, act as a gas barrier, and not be subjected to UV radiation due to sunlight (column 1, lines 18 – 20). The polyester film layer is impervious to helium and carries some shear load (column 1, lines 47 – 49). Additionally, the polyvinyl fluoride layer is resistant to UV degradation as well as wind erosion (column 4, lines 28 – 31). Therefore, it would have been obvious to one having ordinary skill in the art to coat the airship fabric taught by Phillips with the two gas barrier layers taught by Cuccias to provide a

Art Unit: 1771

barrier to helium gas, as well as providing layers which carries some of the shear load and a layer which is UV resistant and wind resistant. Thus, claims 10 – 13, 46 – 48, 55 – 57, and 63 – 65 are rejected.

Phillips fails to teach making the woven fabric from yarns having aromatic polyamides or liquid crystal polyester yarns. Cuccias discloses that airship fabrics used to be from cotton (column 1, lines 31 – 32). However, large, non-rigid airships require high strength crystal polyester of aromatic polyamide fibers due to the strength requirements (column 1, lines 52 – 63). Thus, it would have been obvious for one having ordinary skill in the art to substitute the high strength fibers taught by Cuccias for the cotton fibers in the airship fabrics taught by Phillips to increase the strength of the fabric so that it can be used in non-rigid airships. Thus, claims 25, 49, 58, and 66 are rejected.

Finally, Phillips fails to teach using multiple layers of fabrics as set forth above. Cuccias teaches using multiple fabric layers having unidirectional yarns at different angles (column 2, lines 55 – 65). The multi-layered and multi-directional composite created transfers the stresses between the layers and reduces the possibility of local stress concentrations. Thus, it would have been obvious for one having ordinary skill in the art to add a second fabric layer as taught by Cuccias to prevent the build-up of stress or strain at local points which would cause failure in the fabric. Thus, claims 18 and 19 are rejected.

25. Claims 14 – 17, 23, 41, 45 – 49, 54, 59, and 61 - 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cuccias in view of Phillips.

The features of Cuccias and Phillips have been set forth above. Cuccias fails to teach using a woven fabric with elliptical yarns. Phillips is drawn to fabrics that can be used in airship

Art Unit: 1771

designs. Phillips teaches flattening the yarns of woven fabric will make the fabric thinner and reduce the porosity. The woven fabric can be made from various weaves including basket, plain, twill, and sateen. Phillips also discloses that the flattened fabric requires less coating material to produce fabrics with gas barrier properties (column 4, lines 50 – 55 and column 6, lines 22 – 29). Phillips teaches that this produces a fabric that cost less because less materials are needed (column 6, lines 29 – 34). Further, as set forth above, Phillips discloses a range of twists which can be used in the woven fabric from essentially no twist, which would include 1 twist per inch.. Thus, it would have been obvious for one having ordinary skill in the art to substitute the woven fabric structure taught by Phillips for the woven fabric structure in the airship laminate taught by Cuccias to produce a laminate which is made with less materials and is thinner overall. Thus, claims 14, 16, 59, and 62 – 66 are rejected.

Further, while Phillips doesn't explicitly teach the aspect ratio of the elliptical or ribbon shaped fibers, Phillips clearly teaches that the fibers should have a width greater than the height based on the figures and terms used to describe the shape of the flattened fibers, as set forth above. Thus, it would have been obvious for one having ordinary skill in the art to use yarns with the claimed aspect ratio in the fabric taught by Cuccias, since the flattened yarns need to fill the voids in the wove fabric without becoming too thin that new voids are created or the strength and stability of the woven fabric are compromised. Therefore, claims 23, 41, 45 – 49, 54, and 61 are rejected.

Cuccias fails to teach using a two by two basket weave or less than a woven structure having less 20% of the crossovers of a plain weave fabrics. However Phillips teaches that various weave structures can be used in the laminate fabrics. And as set forth above, a two by

Art Unit: 1771

two basket weave, would produce a fabric with a high dimensional stability. Hence, it would have been obvious to choose a two by two basket weave structure in the woven fabric of Cuccias since a two by two basket weaves has the highest number of crossover points out of any basket weave structure, which would produce a woven fabric with better dimensional stability due to the higher number of crossover points. Thus, claim 15 is rejected.

Further, as set forth above the twill, basket and sateen weaves can have a high number of float yarns which produces a smoother fabric and has less restriction on the ability of the yarn to spread out. Thus, it would have been obvious for one having ordinary skill in the art to use a woven fabric with less than 20% of the crossovers in a plain weave to produce a smoother fabric which is less restricting to the ability of the yarn to flatten out. Therefore, claim 17 is rejected.

26. Claims 14 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mater et al. in view of Phillips.

The features of Mater et al. and Phillips have been set forth above. Mater et al. fails to teach using a basket weave or a weave pattern with less than 50% of the crossing points. Phillips is drawn to coated fabrics for use in airships. Phillips teaches the woven fabric can be made from various weaves including basket, plain, twill, and sateen. As set forth above a basket weave would use 50% of the crossing points. And as set forth above, a two by two basket weave, would produce a fabric with a high dimensional stability. Hence, it would have been obvious to choose a two by two basket weave structure in the woven fabric of Cuccias since a two by two basket weaves has the highest number of crossover points out of any basket weave structure, which would produce a woven fabric with better dimensional stability due to the higher number of crossover points. Thus, claims 14 – 16 are rejected.

Art Unit: 1771

Additionally, as set forth above the twill, basket and sateen weaves can have a high number of float yarns which produces a smoother fabric and has less restriction on the ability of the yarn to spread out. Thus, it would have been obvious for one having ordinary skill in the art to use a woven fabric with less than 20% of the crossovers in a plain weave to produce a smoother fabric which is less restricting to the ability of the yarn to flatten out. Therefore, claim 17 is rejected.

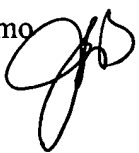
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenna-Leigh Befumo whose telephone number is (703) 605-1170. The examiner can normally be reached on Monday - Friday (9:00 - 5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (703) 308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Jenna-Leigh Befumo
October 28, 2002



TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700